INTERNATIONAL SEARCH REPORT

International application No.

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| IPC(7) | SSIFICATION OF SUBJECT MATTER : B01D 15/00, 24/38 | | | |
| US CL | : 210/675 180 268 260 202 | | | |
| According to | o International Patent Classification (IPC) or to both DS SEARCHED | | | |
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| U.S. : 2 | ocumentation searched (classification system followe 210/675, 676, 189, 268, 269, 283, 284, 287, 289, 29 | d by classification symbols) 1 | | |
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| Documentati | on searched other than minimum documentation to t | he extent that such documer | ts are included in the | G-14. |
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| Electronic da | ata base consulted during the international search (na | me of data base and, where | practicable, search ter | ms used) |
| C. DOC | UMENTS CONSIDERED TO BE RELEVANT | | | |
| Category * | Citation of document, with indication, where | annroprioto ef al | | |
| X | US 1,993,142 A (JOHNSON) 05 March 1935, ent | "PPIOPITATE, OF THE FELEVANI | | evant to claim No |
| Y | os Maich 1955, entire document. | | | 9, 10, 12, 14-16 8-22, 24 and 25 |
| A | US 6,322,704 A (MARTIN) 27 November 2001. | | 8 | , 13, 17 and 23 |
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